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the tail. It was with a flock of other birds, and as it slowly left the bank of the river, I remarked that there was a peculiarity in its gait. It pondered over the ground as it walked with eccentric pace, as if it were measuring angles; and it struck me that it was this trait to which Plutarch alludes, and which gave to the *Ibis* the character of Hierogrammaticus or Geometer. If any one else has had the good fortune to see this bird in its natural state, he will perhaps have noticed the singularity which I have described."

In confirmation of Mr. Harris's remark about the scarcity of the real *Ibis religiosa* at the present day in Egypt, Mr. Gliddon observed, that although he had shot over the length and breadth of the land at all times of the year, he had never seen a *living Ibis* during twenty three years residence there. The only modern specimen of the *Ibis* he had ever seen was a dead one, offered for sale by a Moghrebbee hunter at Cairo, about 1835. Mr. Harris has been familiar with Egypt for twenty-seven years, and besides being a profound hierologist, is a keen and observing sportsman. His experience is therefore authoritative; and a sufficient refutation of the accounts of tourists, who talk of seeing *Ibises* on the Nile as if they were common birds there—confounding this with that commonest of all birds, the *buffalo crane*, called by the Arabs *Aboo-gerdân*.

The *black Ibis*, though very rare has been shot by Mr. Gliddon near lake Bourlos in the Delta. Both species are still abundant above Dongola.

Dr. Morton called attention to two plates, which he exhibited, of Layard's folio illustrations of the ruins of Nineveh, whereon are figured the Camel (*C. bactrianus*,) and Dromedary (*C. dromedarius*,) with as much distinctive accuracy as if they had been drawn but yesterday, and yet they date, according to Mr. Layard, 2600 years before our era, or, according to Rawlinson, more than a thousand years later. In either case, they are additional evidences of the distinctness of species, a point which has been disputed, simply because they are said to produce with each other a fertile hybrid offspring.

The following resolution was adopted: *Resolved*, That a copy of the Proceedings, as far as published, be presented to the Agricultural Society of Lyons.

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October 8th.

Dr. MORTON, President, in the Chair.

Two letters were read from the Secretary of the Geological Society of London, dated severally, May 8th, and May 23d, 1850, acknowledging the reception by that Society, of Part 4, Vol. 1, new series, of the *Journal*, and of recent Nos. of the *Proceedings*.

Also a letter from Col. J. D. Graham, dated Washington, September 20th, 1850, desiring the renewal of his certificate of membership in the Academy, which had been lost. On motion, the request was granted.

Dr. Leidy read a paper describing several species of Entozoa, which was referred to a committee on a previous paper by the same author; viz., Drs. Hallowell, Keller and Zantzinger.

Dr. Leidy also read a paper entitled "Notes on the development of the *Gordius aquaticus*," which was likewise referred to the preceding committee.

Dr. Morton made the following observations on the Antiquity of some races of Dogs:

In tracing back the age of certain canine breeds and species, I chiefly avail myself of the chronology of Prof. Lepsius, which has happily revealed the proximate dates of the Egyptian monuments, and thus enabled us to refer both man and animals to their respective epochs of time.

The following facts are offered as the initiatory portion of an extended series which it is my intention from time to time to bring forward.

1. THE FOX-DOG—(*C. lupaster*).—This animal is of the middle size, with erect ears and somewhat bushy tail. It appears to be the oldest dog of which the Egyptians have left an effigy; for it represents a symbol in their alphabet,\* with which it must be coeval, and therefore demonstrably not much less than six thousand years old. This same dog is again represented on the paintings in the tomb of Roti, at Beni Hassan, which date with the XIIth dynasty, or the 23d century B. C.; and he can thence be traced downwards, through the successive monumental periods, until these cease to record the affairs of Egypt. It is also found embalmed in great numbers in various parts of that country; and lastly, it appears to have been "the parent stock of the modern red wild-dog so common at Cairo and the other towns of the lower country."† Clot-Bey observes that it now leads a nomadic life, and generally without a master, and like the jackal and the fox, frequents the confines of the desert. It does not usually associate with other dogs, but is capable of re-producing with them; but this cross-breed is of no use or value. Ehrenberg, who calls this animal *Canis lupaster*, supposes it to have been primitively a wolf; but as in its present wild state it nowhere becomes a true wolf, we may more safely refer its origin to some feral stock, once and perhaps yet indigenous to the region of the Nile.

2. THE GREYHOUND.—(*C. graius*).—There are three varieties of this animal represented on the monuments of Egypt; but the oldest has long, erect ears, with a smooth, short (and, probably cropped) tail. I first detect it in the paintings in a tomb of the IIIrd dynasty, (where it occurs in several different places,) and is consequently upwards of five thousand years old; thence, I have traced it down through the VIth and XIIth dynasties, where my researches stop for the present for want of the requisite leisure. But this same dog may possibly be represented by the Roumelian greyhound of the present day, which, however, I know only from description.

3. Another greyhound first appears in the tomb of Roti, at Beni Hassan, in the 23d century before Christ.‡ It has all the characters of the pendant-eared greyhound of the present day, as figured by Buffon, but is represented

\* Bunsen, Egypt's place in Universal History, p. 417.

† Wilkinson, Manners and Customs of the Ancient Egyptians, III, p. 38.

‡ Rosellini, Mon. Tav. XVII, fig. 3.

with cropped ears. Now the present Nubian greyhound, as seen in the beautiful plates of M. Prisse's *Oriental Album*, appears to be the very same animal; and it is a curious fact, mentioned to me by Mr. Gliddon, that the Modern Nubians habitually crop the ears of this dog.

4. The third form of antique greyhound has a bushy tail. It is figured by Hamilton Smith from the monuments, but I have not yet met with it, and consequently cannot at present determine its age. A similar form, called the *Akaba greyhound*, is yet common in Syria and Arabia.\*

But what is not less remarkable than the permanence and vast antiquity of the preceding forms, is the fact that what we call the *English greyhound* is figured with every distinctive characteristic, even to the semi-pendant ears, on a supposed antique statue now preserved in the Vatican at Rome. †

The first three of this series are probably primordial forms; but the English greyhound may be a derivative from some partial intermixture, in the same manner that the Irish greyhound is said to be derived from an infusion of the great Danish dog with the common breed. ‡

5. THE BLOODHOUND—(*C. Sagax*).—Several varieties of the stag and bloodhound are very closely allied. In the tomb of Roti, at Beni Hassan, is a painting representing a spirited deer-hunt, and the dogs, two of which are represented, are admirable illustrations of this variety. They are common on the latter monuments: for example, in the *Grand Procession* of Thotmes III, (B. C. 1700,) where several of them are associated with people and productions of the interior of Africa. § Again, yet later, it is seen in a tomb at Gourneh, near Thebes; and if I mistake not, through various later epochs. Now if we compare the oldest of the delineations—viz.: those of Beni Hassan, with the bloodhounds of Africa lately (and perhaps yet) living in the Tower Menagerie in London, we cannot deny their identity, so complete is the resemblance of form and instinct. ||

6. THE TURNSPIT—(*C. vertagus*).—Wilkinson and Blainville have both acknowledged that a variety of this dog is figured in the tomb of Roti, at Beni Hassan. ¶ It is yet common both in Europe and Asia.

7. THE WATCH DOG—(*C. ———*).—Several of these animals, or at least their analogues, are figured in the tomb just mentioned. \*\* They bear a striking resemblance to one figured on a Roman mosaic pavement at Pompeii, and are frequently met with in the East. It is possibly this dog which represents a second canine symbol in the hieroglyphic alphabet; but the figure is too small to enable me to speak with confidence. ††

8. HOUSE DOG—(*C. hybridus*).—I take this identification and provisional specific name, as I have also most of the others of this series, from Blainville. ‡‡

\* La Borde, Trav. through Arabia Petræa, p. 118. Russell's Aleppo, II, p. 179.

† Blainville, Osteographie, Canis, pl. XIV.

‡ Bell, British Quadrupeds, p. 241.

§ Hoskins's Ethiopia, Grand Procession, Part I.

|| Bennett. Tower Menagerie, p. 83.

¶ Rosellini, Tav. XVII, fig. 4.

\*\* Idem. Tab. XVII, fig. 2, 4, 9. See Martin on the Dog, p. 49.

†† Bunsen, ut supra, p. 417.

‡ Osteographie, Canis, pl. XIV. Blainville calls it *chien domestique*. It is also the *Roguet* of the French.

We find this animal also on the monuments of the XIIth dynasty, where it presents some modifications much as we see them in the present day.\*

9. THE WOLF-DOG. (*C. pomeranus*.)—This animal is also well represented at Beni Hassan, with all the characteristics that can be embraced in a drawing that is little more than an outline.† It is also figured on an ancient Etruscan? medal of the second or third century B. C.‡

It will be observed that two of the preceding varieties of dog are coeval with the earliest hieroglyphic symbols; and as these last cannot be later than the age of Menes, the first king of Egypt, we may safely date them on the chronology of Lepsius, as far back as that epoch, viz. 3893 B. C., or 5743 years from our own time; but how much further, we have not, at present, even the means of forming a reasonable conjecture.

One other form—the long-eared greyhound—dates, as we have seen, with the 3d dynasty—about 3500 years B. C. Six additional forms dates with the 12th dynasty, which ended B. C. 2124; and as the tombs of Roti and Nevophth belong to the reign of Osortasen II., they are placed by Lepsius in the twenty-third century before Christ.

I give these pictorial data as a part only of the series; for of the eight hundred plates announced by Dr. Lepsius as in progress of publication, but thirty-five have yet reached this country; and for these I am indebted to the kindness of that distinguished scholar who has at length raised the “Veil of Isis,” and given dates to the hitherto chaotic Monuments of the Nile.

The Rev. Dr. Bachman quotes Hamilton Smith to show that three thousand years ago, two varieties only of the dog were known. This was excusable in a naturalist who at the time of publishing his *Canidæ*, (1839,) could not have seen the complete iconography of either Champollion or Rosellini; and again, at that period the *earliest* sculptures and paintings were unknown, nor had the series been chronologically arranged—a consummation that gives them nearly their whole value in a zoological sense. The Hebrew chronology ascribes the Deluge to the year 2340 B. C. Now three of these dogs date nearly a thousand years earlier in time, and all the rest belong to the twenty-third century before our era. Col. Smith’s views were in accordance with the knowledge of the coexistent time; but any one who had taken the pains even to look over Rosellini’s plates, might have obtained additional information on this question.

10. THE BULL-DOG—(*C. molossus*.)—This animal is admirably figured on a piece of antique Greek sculpture in the Vatican. The form and expression of the head are perfectly characteristic, even to the peculiar arrangement of the teeth.§ It is remarked by Holland in his *Travels in Greece*, that the Bull-dog is yet the dominant variety of Albania, where it has been trained to guard the flocks, and thus to take the place of the Shepherd’s dog.

11. MASTIFF. (*C. lanarius*.)—I have not yet detected this dog on the Nilotic monuments; but it is mentioned by Aristotle and seen on two ancient Greek medals, one of which, that of Segestus of Sicily, dates with 4th or 5th century B. C.—The other, which is of Aquila Severa, Dictator of Crete, is about two centuries later.||

\*Rosellini, Mon. Tav. XVI, fig. 5.

†Rosellini, Mon. Tav. XVII, fig. 5.

‡Blainville, Osteographie, Canis, pl. XIV.

§Blainville, Osteographie, Canis, p. 74.

||Idem.

12. SHEPHERD'S DOG—(*C. domesticus*.)—The earliest effigy of this animal, which is mentioned by Aristotle, is preserved on ancient Etruscan medals of unknown date. The probability is that it was familiar to man in the earliest ages, and may yet be found on the Egyptian monuments. It is doubtless one of the primordial forms of the canine race.

In allusion to the illustrations derived from the monuments, Blainville truly remarks that "we here see a large number of our existing breeds of dogs;" and inasmuch as they have preserved their identity through such vast periods of time, not only in the most diversified climates, but also under the influence of the greatest variety of circumstances, is it not reasonable to believe that a part at least of these forms, constitute essential primeval types? We trace them back into the "night of time," and find them as distinct as they yet are in the living *Fauna*; and it remains for those persons who insist that they all have been derived from an aboriginal pair, to give us something more in proof than analogical reasoning, or inferences drawn from arbitrary views of the laws of Nature.

But an evidence of the great antiquity of the animal we call the domestic dog, and one to which I have already alluded, is the fact that it has been recently found in a fossil state in two localities very remote from each other. First, in Germany by Schmerling, and secondly, in New Zealand by Mr. W. Mantell, (son of the celebrated geologist,) who there found it associated with the bones of the gigantic *Dinornis*. Now from these facts I conceive we must conclude, either that some forms of this animal are primordial and independent of human domestications; or, that man himself, having existed contemporaneously with these now fossilized animals, claims a vast antiquity as a denizen of the earth.

It is shrewdly observed by Azara, that if the differences among dogs were the result of climate, all the dogs of each separate country should be alike. To this I may add, that if they are all descended from a single primal type, they ought, on resuming the wild state, to return to this type. Yet in America, where the experiment has been observed on the largest and most unequivocal scale, we see no such result. In Jamaica, they have in some instances reverted to the shepherd's dog—in others, to the great Danish dog; and this last variety is the dominant one in the wild packs of Paraguay. In Cuba they have sometimes resembled greyhounds, and in the pampas of Brazil they are more like terriers. *In other words, they constantly tend to recur to that primitive element which is most dominant in their physical constitution*; and it is remarkable that in the old world this restored type is never the wolf, although it is sometimes, as we have seen, a lupine dog, owing to the physiological cause just mentioned.

The blending of the opposite extremes of these types, and these hybrids again with each other, gives rise, as every one knows, to these degenerate animals known as pugs, shocks, spaniels, &c., which Cuvier justly calls "the most degenerate productions," and which are found "to possess a short and fleeting existence—the common lot of all types of modern origin."

Among the North American Indians, the original forms are very few and closely allied; whence it happens that these grotesque varieties never appear. Neither have they any approximation to that marked family we call *hounds*; and this fact is the more remarkable since the Indian dogs are employed in the same manner of hunting as the hounds of Europe, Asia and Africa. Yet, this similarity of employment has caused no analogy of exterior form. No varieties like those so familiar in Europe, spring up among them. They are as homogeneous as the

wolf races from whom they have descended; and Dr. Richardson quotes Theodat to show that the *common Indian dog* has not materially changed during two hundred and twenty years. Again, the same remark applies to the indigenous *Alco* and *Techichi* dogs of Mexico and South America, which, before their admixture with European breeds, conformed to the types or species from whence they sprung, without branching into the thirty *varieties* of Buffon, or the sixty of Brown. The dog of New-Caledonia, in the western regions of Arctic America, cannot be regarded as an exception, for he is also a lupine animal, although too little is known of him to enable us to suggest his relative position to the other American races. The Indian dog of Florida partakes largely also of the wolf, and is supposed by Hamilton Smith to be intermediate between the common grey wolf (*C. occidentalis*) and the Newfoundland dog, *C. palmatus*. And finally, the latter animal, which belongs also to the same great dog family, is by some naturalists regarded as a cross between the Esquimaux dog and some exotic breed. To this latter question I have not yet given attention.

What is true of forms is equally true of instincts.

"It is undoubtedly true (observes Sir. C. Lyell) that many new habits and qualities have not only been acquired, in recent times, by certain races of dogs, but have been transmitted to their offspring. But in these cases it will be observed that the new peculiarities have an intimate relation to the habits of the animal in a wild state, and therefore do not attest any tendency to departure, to an indefinite extent, from the original type of the species."

The author then instances a peculiar mode in which a certain breed of dogs attack the deer on the platform of Santa Fé, in Mexico, and adds, that other European hunting dogs, though of superior strength and general sagacity, are destitute of this instinct, and are often, in consequence, killed by the deer.

I explain this phenomenon, not on the supposition of a new, but of a latent instinct, which circumstances have merely developed; and as by crossing dissimilar species or varieties of dogs, we obtain the blended and opposite lineaments of both, so, by the same process, we may combine a double or modified instinct.

In view of the preceding facts, I continue to regard the great canine race of the old and new world as constituted of many species of primordial dogs; of three, at least, (and perhaps more) species of wolves; of some accessions from the fox-tribe, and a less certain infusion of the jackal. The wolves that appear to have principally contributed to this protean family, are the *Canis lupus* of the old world, and the *C. occidentalis*, or common grey-wolf, and the *C. latrans* or prairie-wolf of America. The evidence of the fox-tribe are most conspicuously shown in the Aguará dogs of more southern latitudes.

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October 15th.

Dr. MORTON, President, in the Chair.

Two letters were read from the Agricultural Society of Lyons, dated severally, August 10, 1849, and April 12, 1850, informing the Academy of the transmission by that Society, of Vols. 10 and 11 of its Annals.

Also a letter from the National Academy of Sciences of Lyons, dated July 2, 1850, accompanying a copy of its Memoirs for 1848-50.